



ΕΛΛΗΝΙΚΟ
ΔΙΑΔΡΑΣΤΙΚΟ
ΣΧΟΛΕΙΟ

ΟΥΡΟΛΟΓΙΑΣ

1718191101

Απρίλιος_Πορταριά_Πήλιο

PCNL: είναι και θα μείνει χρυσή επιλογή!

Σταύρος Σφουγγαριστός, MD, PhD

Ακαδημαϊκός Υπότροφος
Α΄ Ουρολογική Κλινική ΑΠΘ





No conflicts of interest





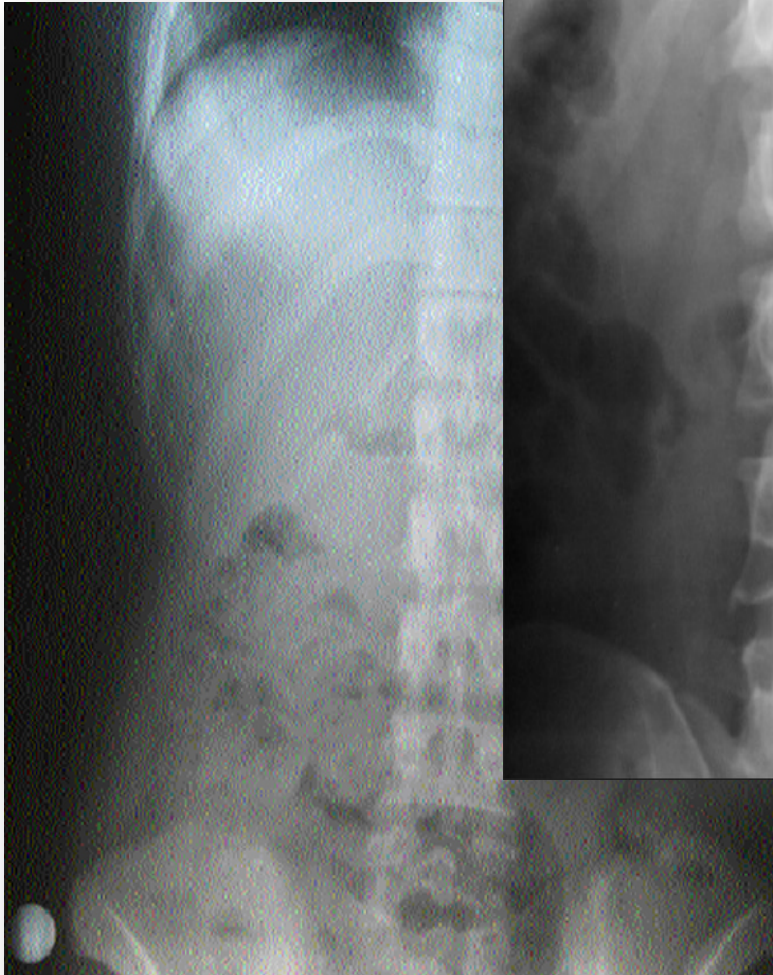
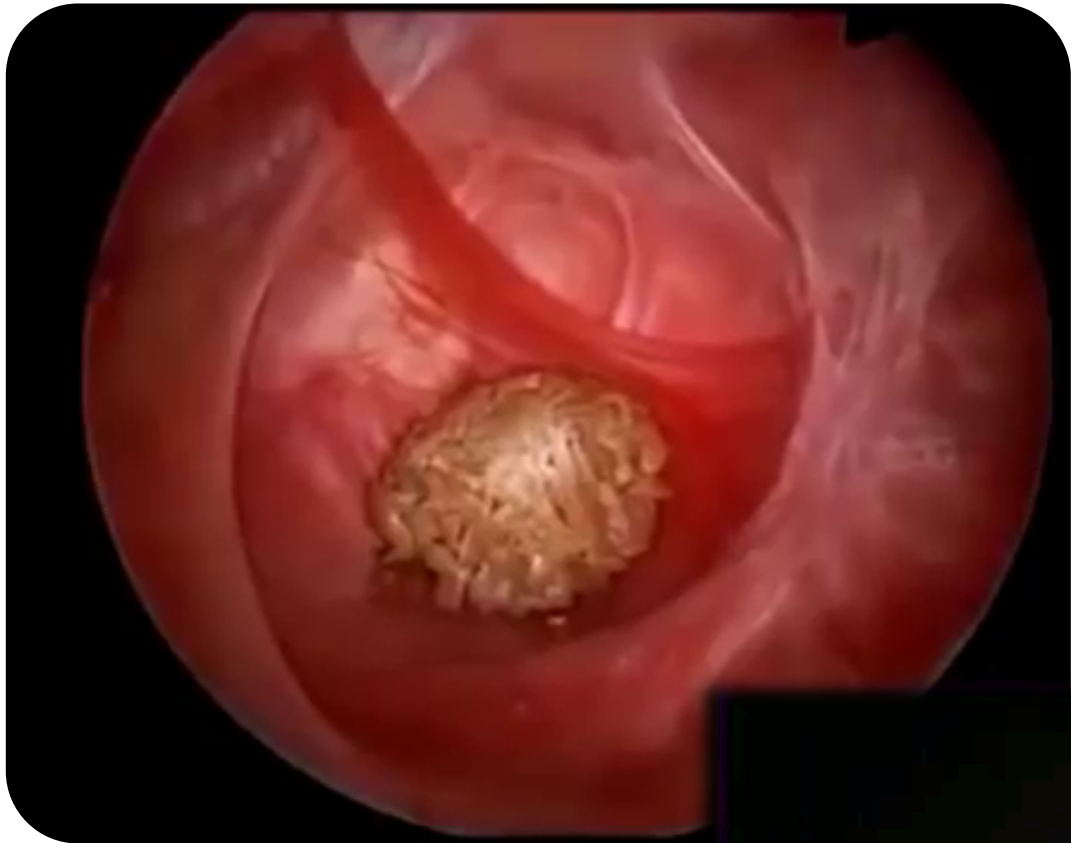


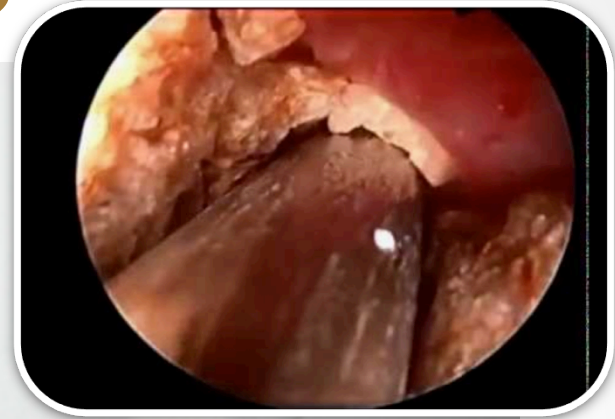
Figure: Plain X-ray showing a 23×23mm opacity at left T-11-12 level.



Λιθοτρίπτες

- **PCNL**

- ✓ U/S
- ✓ Pneumatic
- ✓ Electrohydraulic
- ✓ Συνδυασμός
(Lithoclast, CyberWarm)



- **RIRS**

- ✓ laser



Κόστος



PCNL

✓ 3000 - 4000€

(+ 5000€

εύκαμπτο

νεφροσκόπιο)

RIRS

✓ 15000-20000€

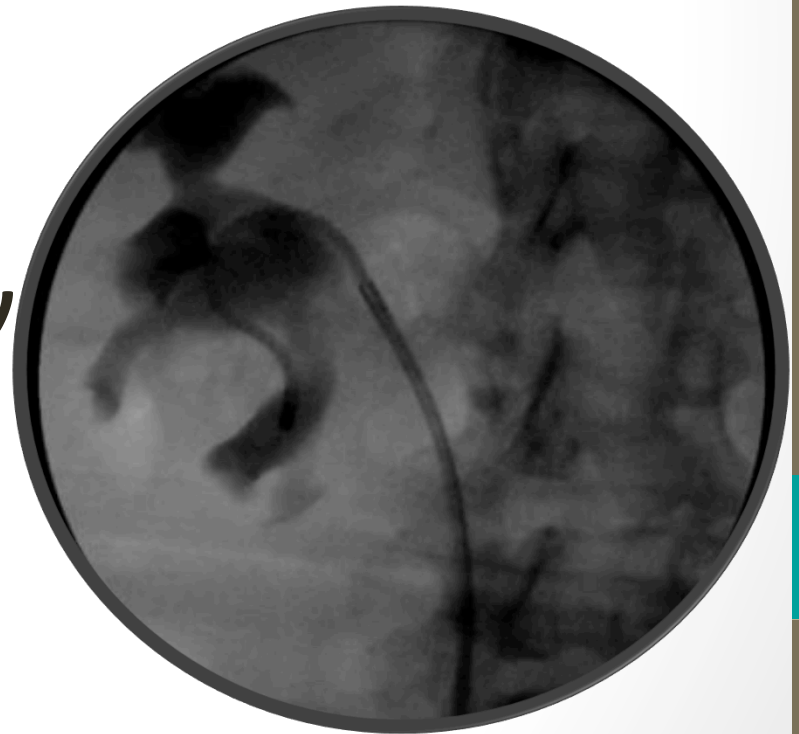


Ανατομία



Ανατομία-Κάτω Κάλυκα

- μετακίνηση του λίθου σε άνω κάλυκα
- καταπόνηση του ουρητηροσκοπίου
- μειωμένες πιθανότητες αποβολής συγκριμάτων



Ανατομία-Κάτω Κάλυκας

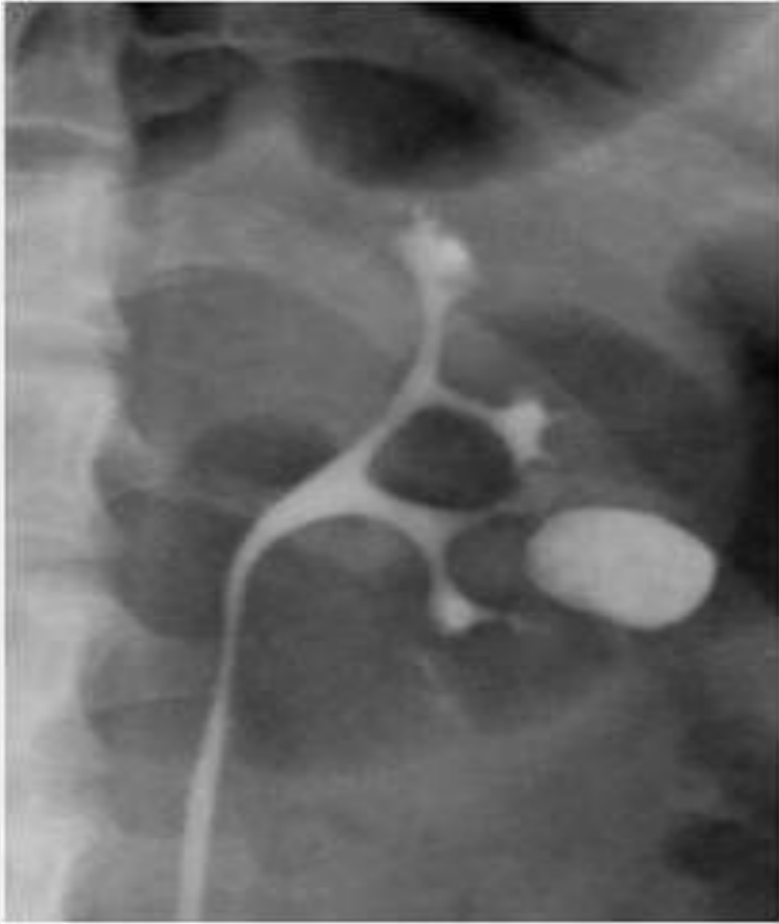
Table 2 | Technical characteristics of selected flexible ureteroscopes

Manufacturer and model	Number and diameter of channels	Tip diameter	Outer diameter	Length of shaft	Optical system	Maximum deflection (down/up)
<i>Olympus (Germany)</i>						
URF-V	Single: 3.6F	8.5F	9.9F	67 cm	Digital	275°/180°
URF-P5	Single: 3.6F	5.3F	8.4F	70cm	Fibre-optic	275°/180°
URF-P6	Single: 3.6F	4.9F	7.95F	67 cm	Fibre-optic	275°/275°
<i>Richard Wolf (Germany)</i>						
Viper	Single: 3.6F	6F	8.8F	68cm	Fibre-optic	270°/270°
Cobra	Dual: both 3.3F	6F	9.9F	68cm	Fibre-optic	270°/270°
<i>KARL STORZ Endoskope (Germany)</i>						
Flex-X ²	Single: 3.6F	7.5F	8.4F	67 cm	Fibre-optic	270°/270°
Flex-Xc	Single: 3.6F	7.8F	8.5F	70cm	Digital	270°/270°
<i>Lumenis (Israel)</i>						
PolyScope	Single: 3.5F	8F	8F	85 cm	Fibre-optic	180°*
<i>MaxiFlex (USA)</i>						
SemiFlex™ Endo55	Single: 3.4F	6.4F	7.85F	55 cm	Fibre-optic	210°/210°
SemiFlex™ Endo65	Single: 3.4F	6.4F	7.85F	65 cm	Fibre-optic	210°/210°

*180° single direction deflection but the instrument can be rotated 360°.



Ανατομία: Καλυκτικό Εκκόλπωμα

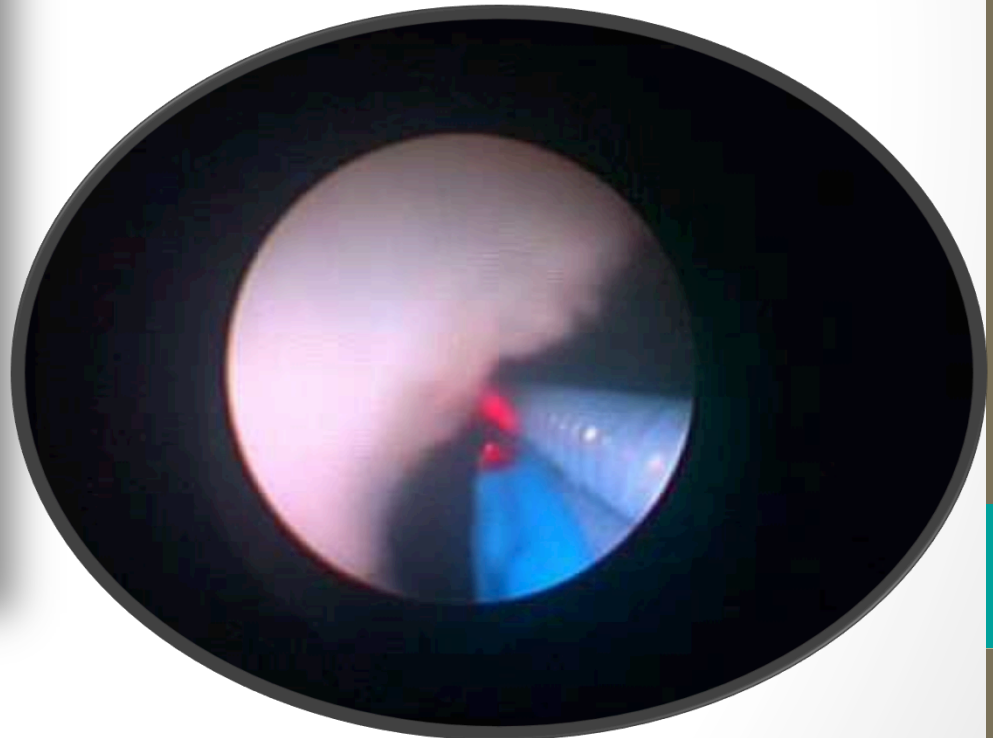


Ανατομία-Στένωση ΠΟΣ



Success rate = 65% - 95%

Stein RJ, Gill IS, Desai MM. Comparison of surgical approaches to ureteropelvic junction obstruction: endopyeloplasty versus endopyelotomy versus laparoscopic pyeloplasty. *Curr Urol Rep.* 2007;8:140-9.



Τεχνολογία



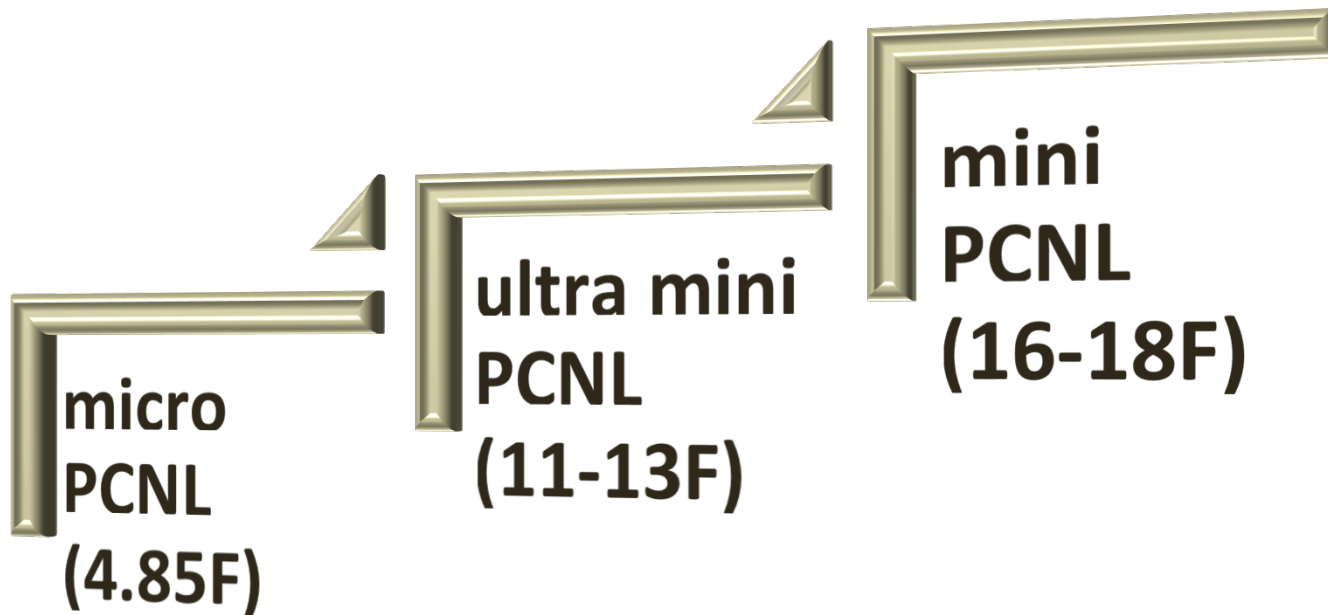
Mini PCNL



Yamaguchi A, Skolarikos A, Buchholz NP, et al. Operating times and bleeding complications in percutaneous nephrolithotomy: a comparison of tract dilation methods in 5,537 patients in the Clinical Research Office of the Endourological Society Percutaneous Nephrolithotomy Global Study. J Endourol 2011;25:933-9.



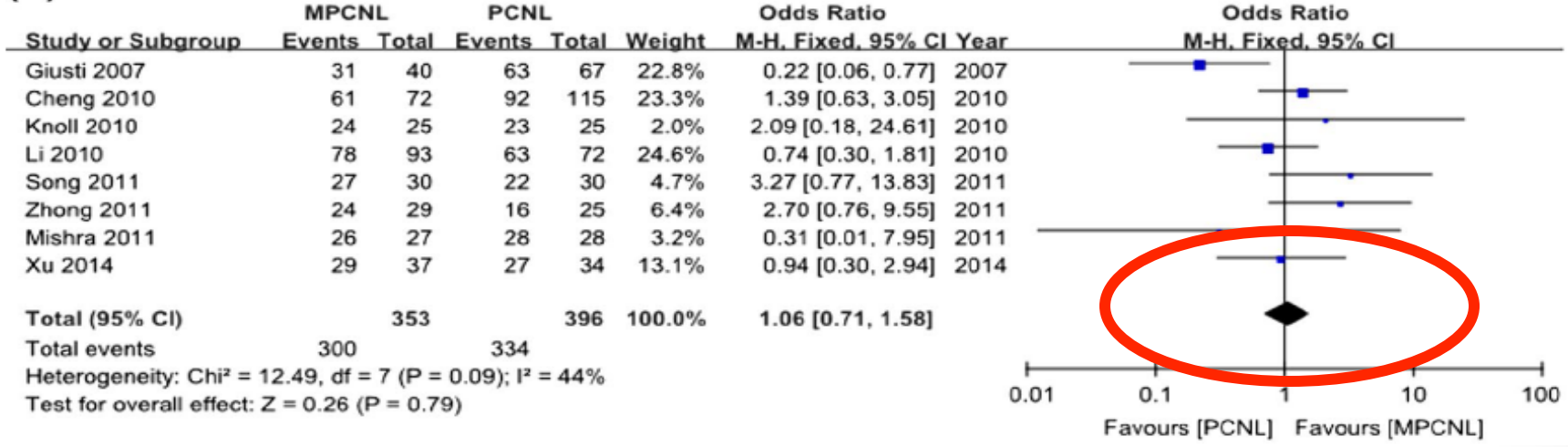
Mini PCNL



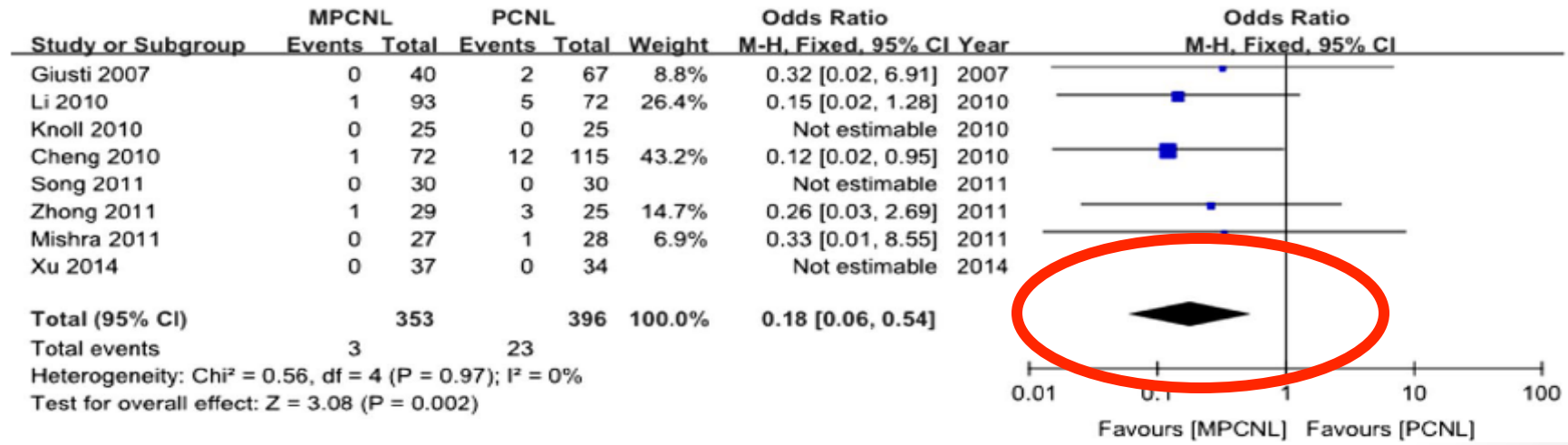
Desai MR, Sharma R, Mishra S, et al. Single-step percutaneous nephrolithotomy (microperc): the initial clinical report. J Urol 2011;186:140-5.



(A) SFR



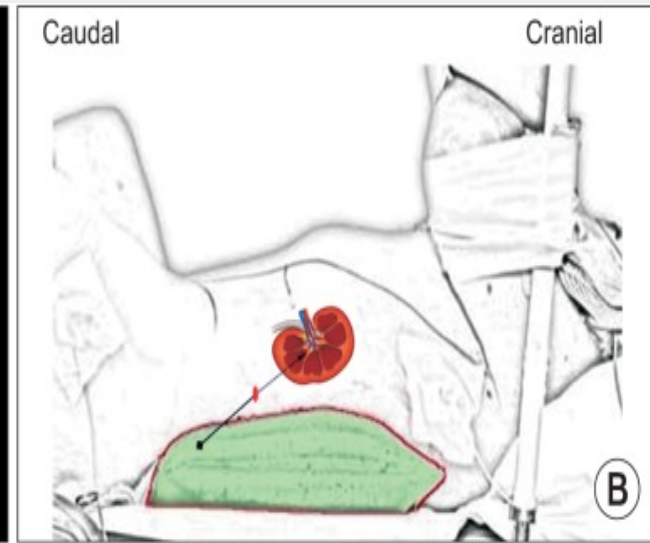
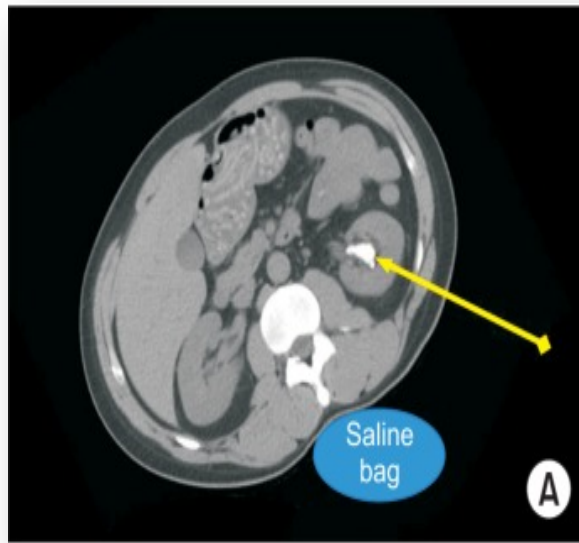
(C) Blood Transfusion



Zhu W, Liu Y, Liu L, et al. Minimally invasive versus standard percutaneous nephrolithotomy: a meta-analysis. Urolithiasis 2015;43:563-70.



Supine PCNL



ECIRS

Endoscopic Combined IntraRenal Surgery





available at www.sciencedirect.com
 journal homepage: www.europeanurology.com

EAU
 European Association of Urology

Platinum Priority – Review – Stone Disease

Editorial by Thomas B.L. Lam and Sam McClinton on pp. 138–139 of this issue

Percutaneous Nephrolithotomy Versus Retrograde Intrarenal Surgery: A Systematic Review and Meta-analysis

Shuba De^a, Riccardo Autorino^{b,c,*}, Fernando J. Kim^d, Homayoun Zargar^a,
 Humberto Laydner^c, Raffaele Balsamo^b, Fabio C. Torricelli^{a,e}, Carmine Di Palma^b,
 Wilson R. Molina^d, Manoj Monga^a, Marco De Sio^b

^aGlickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA; ^bUrology Service, Second University of Naples, Naples, Italy; ^cUrology Institute, University Hospitals Case Medical Center, Cleveland, OH, USA; ^dDepartment of Urology, Denver Health Medical Center, Denver, CO, USA; ^eDivision of Urology, Hospital das Clinicas, University of São Paulo, São Paulo, São Paulo, Brazil



Table 1 – Percutaneous nephrolithotomy versus retrograde intrarenal surgery: summary of comparative studies

Study	Institution (country)	Study period	Study design	LE	Inclusion criteria	PCNL technique (access sheath size)	Cases, n		Study quality
							PCNL	RIRS	
Akman et al. [15]	Haseki Hospital (Turkey)	2008–2011	Matched-pair analysis	3b	2–4 cm, single or multiple stones, any location	Standard (30F)	34	34	6 [*]
Bozkurt et al. [16]	Kecioren Hospital (Turkey)		Retrospective case control	3b	1.5–2 cm, no previous treatment	Standard (24F)	42	37	6 [*]
Bryniarski et al. [17]	Silesia Medical University (Poland)	2008–2010	RCT	2b	>2 cm, single stone, renal pelvis location, no previous treatment	Standard (30F)	32	32	3 [°]
Sabnis et al. [19]	Muljibhai Patel Hospital (India)	2009–2011	Prospective case control	3b	1–2 cm, single or multiple stones, any location	Mini (16–19F)	32	32	6 [*]
Ozturk et al. [18]	Diskapi Yildirim Beyazit Hospital (Turkey)	2007–2012	Retrospective case control	3b	1–2 cm, lower pole	Standard (30F)	144	38	5 [*]
Kirac et al. [20]	Koru Hospital (Turkey)	2009–2012	Retrospective case control	3b	<1.5 cm, lower pole	Mini (16–18F)	37	36	6 [*]
Sabnis et al. [22]	Muljibhai Patel Hospital (India)	2011–2012	RCT	2b	<1.5 cm, single stone or multiple stones accessible via single tract	Micro (16 g)	35	35	3 [°]
Kruck et al. [13]	Multiple institutions (Germany)	2001–2007	Retrospective case control	3b	Any size, any location	Mini (16–18F)	172	108	4 [*]
Resorlu et al. [12]	Multiple institutions (Turkey)		Retrospective case control	3b	1–2 cm radiolucent stones, any location	Mixed (12–30F)	140	46	6 [*]
Pan et al. [21]	Renji Hospital (China)	2005–2011	Prospective case control	3b	2–3 cm, single stone, any location	Mini (18F)	59	56	6 [*]

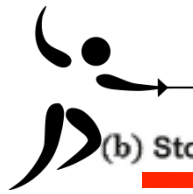
LE = level of evidence; PCNL = percutaneous nephrolithotomy; RCT = randomised controlled trial; RIRS = retrograde intrarenal surgery.

^{*} Using Newcastle-Ottawa Scale (score from 0 to 9).

[°] Using Jadad scale (score from 0 to 5).

De S, Autorino R, Kim FJ, et al. Percutaneous nephrolithotomy versus retrograde intrarenal surgery: a systematic review and meta-analysis. Eur Urol 2015;67:125-37.

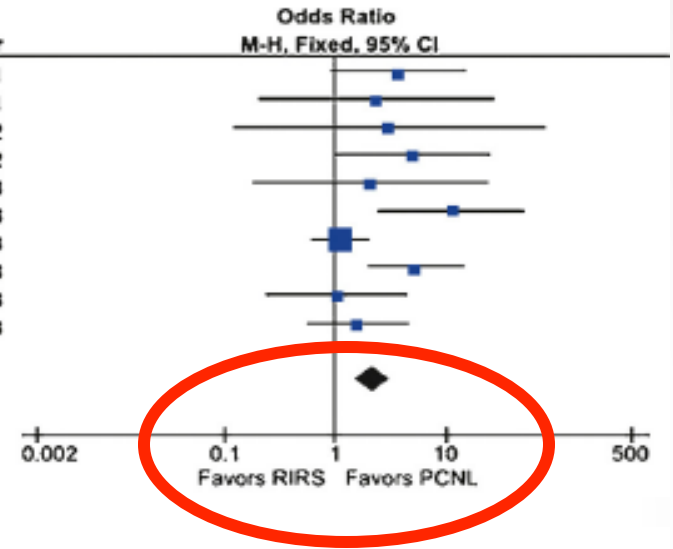




(b) Stone-free rate

Study or Subgroup	PCNL		RIRS		Weight	Odds Ratio	
	Events	Total	Events	Total		M-H, Fixed, 95% CI	Year
Akman 2011	31	34	25	34	5.5%	3.72	[0.91, 15.22] 2011
Bozkurt 2011	41	42	35	37	2.2%	2.34	[0.20, 26.95] 2011
Sabinis 2012	32	32	31	32	1.2%	3.10	[0.12, 78.87] 2012
Bryniarski 2012	30	32	24	32	3.8%	5.00	[0.97, 25.77] 2012
Sabinis 2013	34	35	33	35	2.4%	2.06	[0.18, 23.83] 2013
Pan 2013	57	59	40	56	3.5%	11.40	[2.48, 52.36] 2013
Kruck 2013	137	172	84	108	52.7%	1.12	[0.62, 2.01] 2013
Ozturk 2013	135	144	28	38	7.0%	5.36	[1.99, 14.39] 2013
Kirac 2013	33	37	32	36	8.8%	1.03	[0.24, 4.48] 2013
Resorlu 2013	128	140	40	46	13.0%	1.60	[0.56, 4.54] 2013
Total (95% CI)		727		454	100.0%	2.19	[1.53, 3.13]
Total events	658		372				

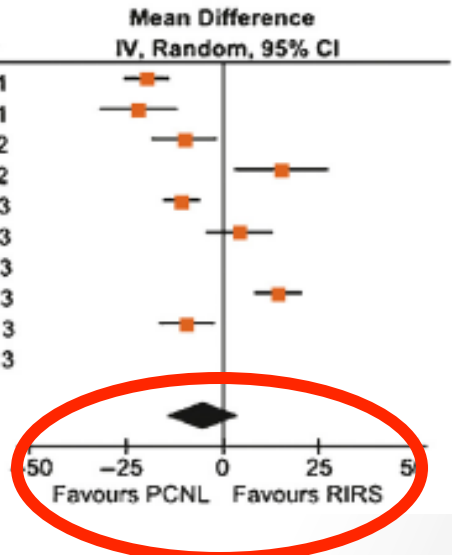
Heterogeneity: $\chi^2 = 15.62$, $df = 9$ ($p = 0.08$); $I^2 = 42\%$
 Test for overall effect: $Z = 4.30$ ($p < 0.0001$)



(a) Operative time

Study or Subgroup	PCNL		RIRS		Total	Weight	Mean Difference	
	Mean	SD	Mean	SD			IV, Random, 95% CI	Year
Akman 2011	38.7	11.6	34	58.2	13.4	34	13.0%	-19.50 [-25.46, -13.54] 2011
Bozkurt 2011	45.8	19.6	42	67.5	24.3	37	11.9%	-21.70 [-31.52, -11.88] 2011
Sabinis 2012	40.8	13.8	32	50.6	19.2	32	12.4%	-9.80 [-17.99, -1.61] 2012
Bryniarski 2012	100.1	29.9	32	85	17.6	32	11.2%	15.10 [3.08, 27.12] 2012
Pan 2013	62.4	10.6	59	73	13.5	56	13.3%	-10.60 [-15.05, -6.15] 2013
Sabinis 2013	51.6	18.5	35	47.1	17.5	35	12.4%	4.50 [-3.94, 12.94] 2013
Ozturk 2013	0	0	0	0	0	0		Not estimable 2013
Resorlu 2013	57.5	22.1	140	43.1	17	46	13.0%	14.40 [8.27, 20.53] 2013
Kirac 2013	57.3	14.5	37	66.4	15.8	36	12.8%	-9.10 [-16.06, -2.14] 2013
Kruck 2013	0	0	0	0	0	0		Not estimable 2013
Total (95% CI)			411			308	100.0%	-4.81 [-14.05, 4.43]

Heterogeneity: $\tau^2 = 161.38$; $\chi^2 = 95.53$, $df = 7$ ($p < 0.00001$); $I^2 = 93\%$
 Test for overall effect: $Z = 1.02$ ($p = 0.31$)



De S, Autorino R, Kim FJ, et al. Percutaneous nephrolithotomy versus retrograde intrarenal surgery: a systematic review and meta-analysis. Eur Urol 2015;67:125-37.



(c) Complication rate



Study or Subgroup	PCNL		RIRS		Weight	Odds Ratio		Year	Odds Ratio	
	Events	Total	Events	Total		M-H, Fixed, 95% CI	M-H, Fixed, 95% CI			

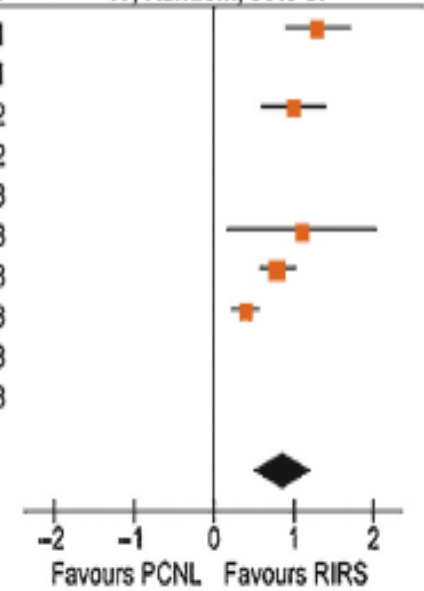
(e) Hospital stay

Study or Subgroup	PCNL		RIRS		Weight	Mean Difference		Year	Mean Difference	
	Mean	SD	Mean	SD		IV, Random, 95% CI	IV, Random, 95% CI			

(d) Hb drop

Study or Subgroup	PCNL		RIRS		Weight	Mean Difference		Year	Mean Difference	
	Mean	SD	Mean	SD		IV, Random, 95% CI	IV, Random, 95% CI			

Total (95% CI)			197		193	100.0%	0.87 [0.51, 1.22]		
Heterogeneity:	Tau ² = 0.12; Chi ² = 24.05, df = 4 (p < 0.0001); I ² = 83%								
Test for overall effect:	Z = 4.77 (p < 0.00001)								



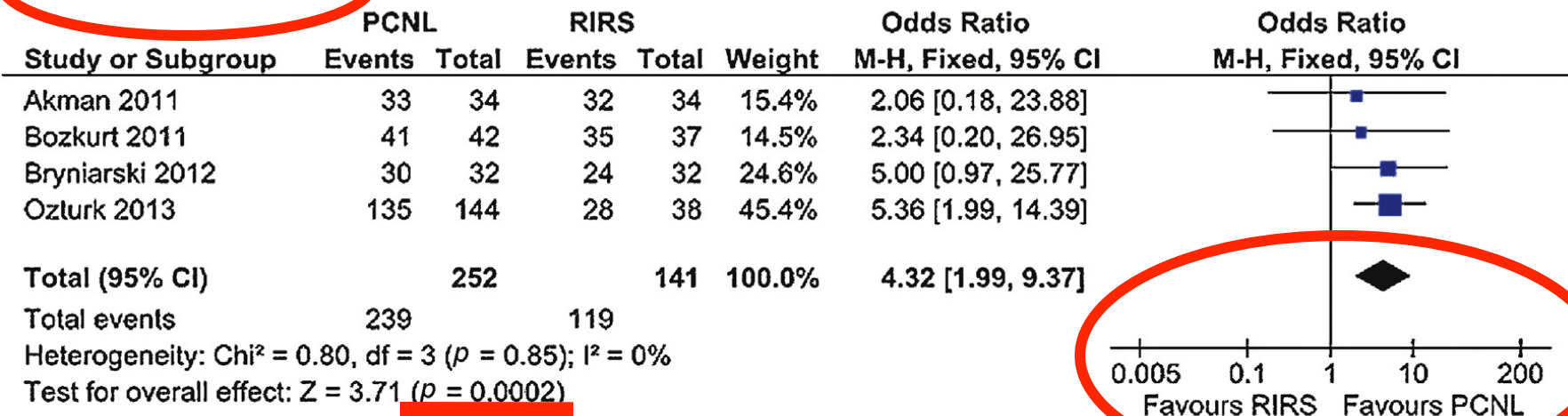
De S, Autorino R, Kim FJ, et al. Percutaneous nephrolithotomy versus retrograde intrarenal surgery: a systematic review and meta-analysis. Eur Urol 2015;67:125-37.



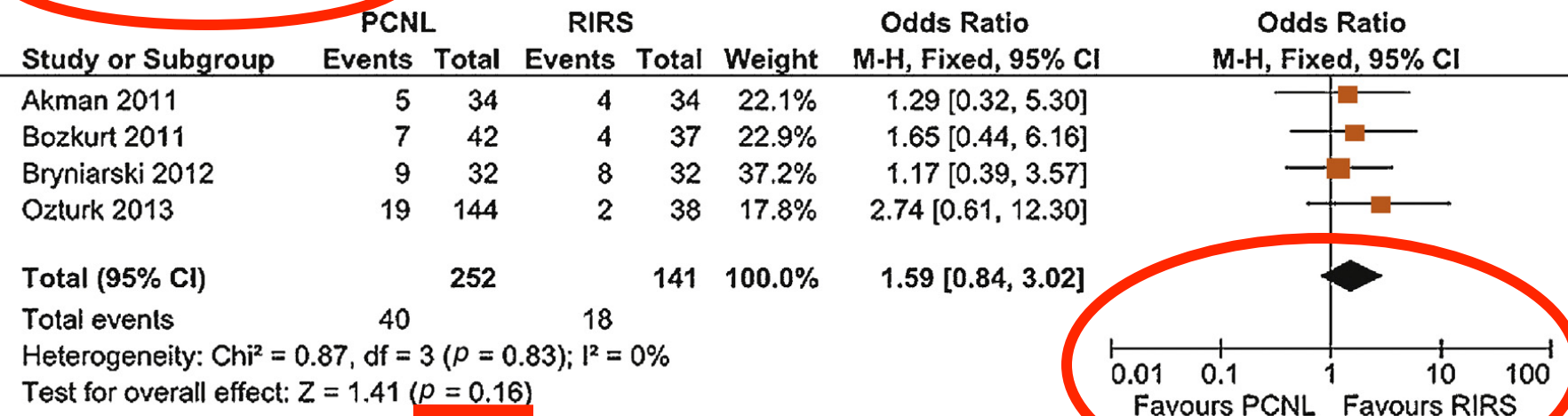
Subgroup analysis Std PCNL vs. RIRS



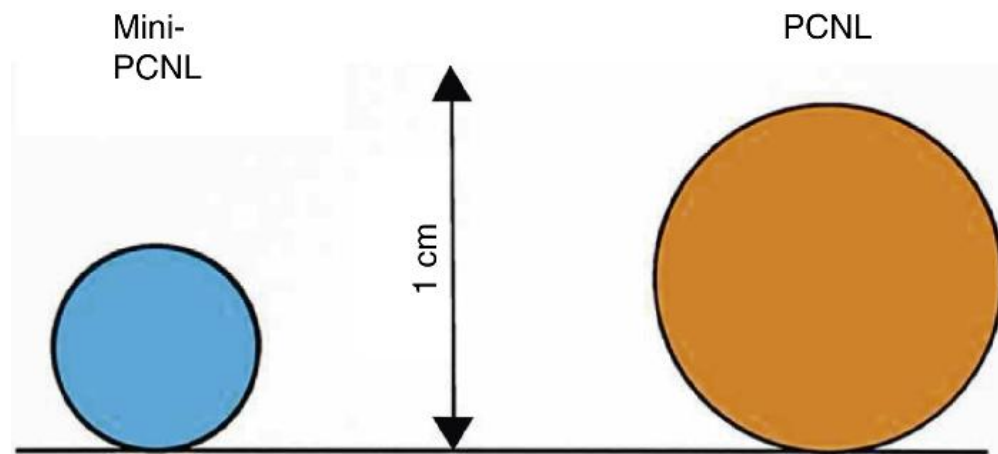
(b) Stone-free rate



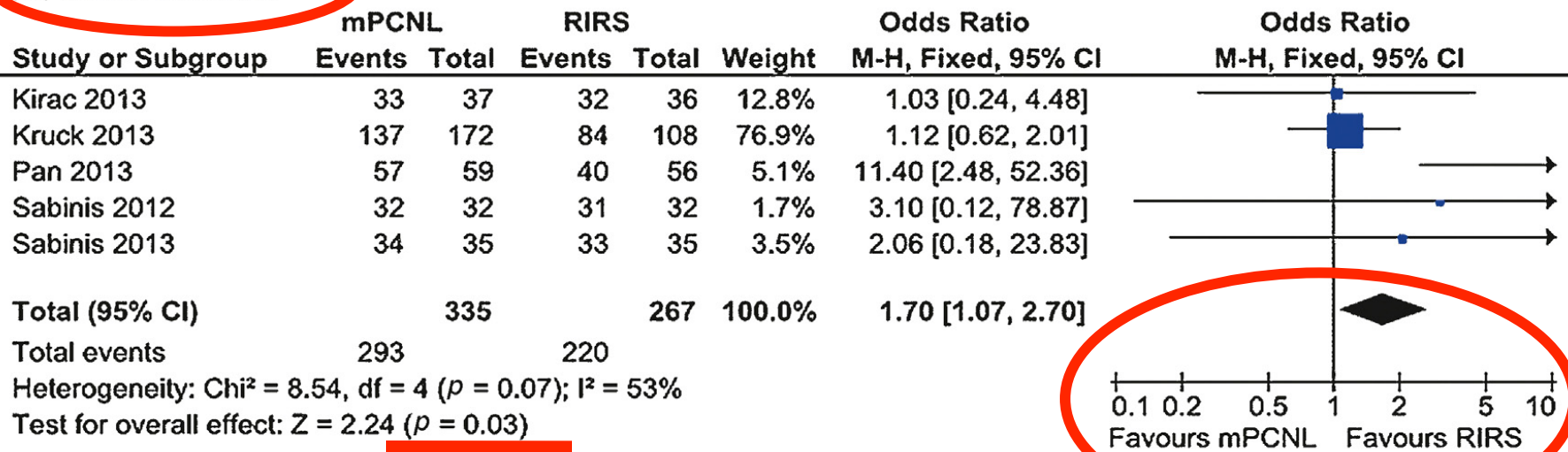
(c) Complication rate



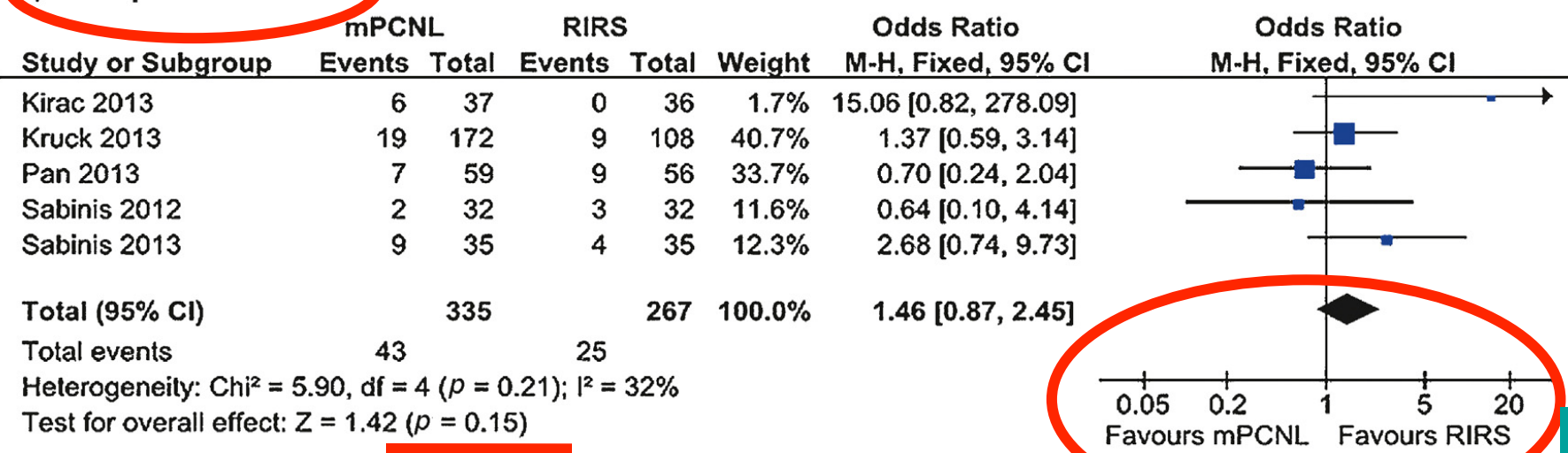
Subgroup analysis mini PCNL vs. RIRS



(b) Stone-free rate



(c) Complication rate



Συμπεράσματα

Αποτελεσματικότητα;

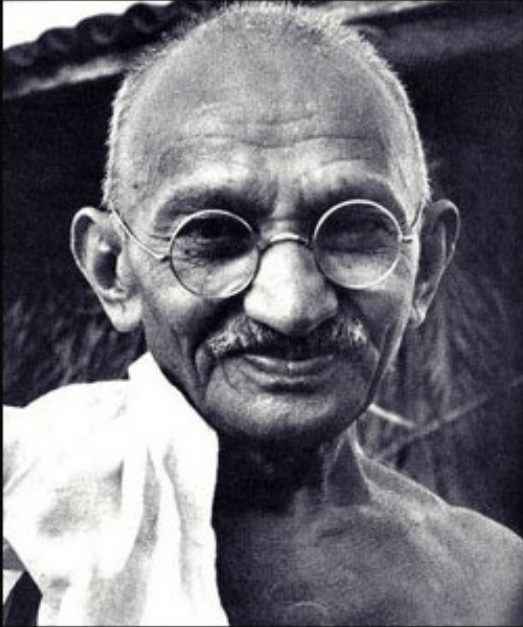
- ✓ PCNL > RIRS για λίθους >2cm
- ✓ mini PCNL < RIRS για λίθους <2cm



Ασφάλεια;

- ✓ PCNL = RIRS





Whenever you are confronted with an
opponent. Conquer him with love.

(Mahatma Gandhi)

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Ευχαριστώ!

